Computational Mathematics and Mathematical Physics 2007 vol.47 N10, pages 1712-1719

Design of a subsonic airfoil with upstream blowing

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Abstract

The problem is solved of designing a symmetric airfoil with upstream blowing opposite to subsonic irrotational steady flow of an inviscid incompressible fluid. The solution relies on Sedov's idea of a stagnation region developing in the neighborhood of the stagnation point. An iterative solution process is developed, and examples of airfoils are constructed. The numerical results are analyzed, and conclusions are drawn about the effect of blowing parameters on the airfoil geometry and the resultant force acting on the airfoil. © 2007 Pleiades Publishing, Ltd.

http://dx.doi.org/10.1134/S0965542507100119

Keywords

Design of an airfoil with blowing, Iterative solution method, Stagnation region formation in the neighborhood of a stagnation point